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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/547,061	04/07/2000	Lars S. Carlson	07402/039001	3231

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EXAMINER
CRUZ, LOURDES C

ART UNIT	PAPER NUMBER
2827	

DATE MAILED: 06/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/547,061	CARLSON ET AL.	
	Examiner	Art Unit	
	Lourdes C. Cruz	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *4-23-02* .

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *14-17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 7-13* is/are rejected.

7)☒ Claim(s) *5 and 6* is/are objected to.

8)☒ Claims *14-17* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 and 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Panchou et al. (US 6040630).

See that Panchou teaches a die 11; first and second contacts (12,38), said first contact coupled to a surface of the die, and said second conductive contact coupled to an external structure, and an insulating island 30 wherein said island provides reduction (**Claim 8**) in transmission of mechanical stress from said silver epoxy bond into the die.

Panchou fails to disclose:

- a silver epoxy bond (Col. 4, lines 65+) between said first and second conductive contacts, said epoxy bond providing electrical and mechanical interconnection between said die and said external structure (**Claims 1,10**)
- a photodetector or p-i-n diode (**Claims 2,3,11-13**)
- an oxide containing insulating island (**Claims 4,7**)

Although Panchou fails to disclose the above failure to specifically disclose a silver epoxy bond is considered to be a failure to give a specific characteristic about said bond, and it is considered to suggest the use of materials commonly used among semiconductor artisans and well known in the art. Therefore, to form silver epoxy bonds would have been obvious to one skilled in the art as Panchou suggests its use, and silver epoxy bonds are conventionally used in the art, as discussed above.

Panchou also fails to disclose an oxide-containing island. Insulating island are commonly used in the semiconductor art, and oxide containing ones are widely known. However, Panchou teaches an insulating island which although not made of an oxide containing material is considered to suggest the use of materials well known in the art for the formation of insulative layers. Therefore, it would have been obvious to for an oxide- containing island for they are well known in the art, and Panchou suggests its use.

Furthermore, flip chip 11 disclosed by Panchou is not further described, which it is considered to inherently disclose any type of semiconductor die or use thereof.

With regard to claims 7 and 9-13, all the structural limitations recited have been discussed above. However, a "product by process" claim is directed to the product per se, no matter how actually made, In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Marosi et al, 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the

patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Claims 5 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 4-23-02 have been fully considered but they are not persuasive. Applicant argues that the prior art fails to teach islands that prevent migration. This is not persuasive for the claimed island has not been claimed is a way such that one with skill in the art would understand how and to what degree it is structurally different to the prior art's island. See that insulating island 30 is interposed between bumps 14, therefore preventing cross-contamination of silver from the bump in the right to the pad in the left, and so on. The claims do not provide with language that recites absence of such island between bumps underneath the center part of the flip chip.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shimada et al., Schueller, Dalal et al., and Duesman et al. disclose flip chips being mounted on a semiconductor substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lourdes C. Cruz whose telephone number is 707-306-5691. The examiner can normally be reached on M-F 8:00- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Lourdes C. Cruz
Examiner
Art Unit 2827

Lourdes Cruz
June 1, 2002

DAVID L. TALBOTT
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800